CLAIMS

1. A cleaning polish etch composition for treating a superfinished surface of a substrate, the cleaning polish etch composition consisting essentially of:

a carrying fluid;

etchant for etching the substrate and/or attached slurry particles.

2. The cleaning polish etch composition as recited in claim 1, wherein the substrate is selected from a group consisting of a glass disk substrate, a ceramic disk substrate, and a glass-ceramic disk substrate for use in a data storage device.

3. The cleaning polish etch composition as recited in claim 2, wherein the substrate is a silicate-based glass disk substrate.

4. The cleaning polish etch composition as recited in claim 3, wherein the cleaning polish etch composition has a pH of approximately 0 to 4.

5. The cleaning polish etch composition as recited in claim 4, wherein the cleaning polish etch composition has a pH of approximately 0.8 to 3.0.

6. The cleaning polish etch composition as recited in claim 5, wherein the cleaning polish etch composition has a pH of approximately 1.0 to 2.0.

7. The cleaning polish etch composition as recited in claim 1, wherein the substrate is a head wafer selected from a group consisting of Sendust and Permalloy.

8. The cleaning polish etch composition as recited in claim 7, wherein the substrate is a Sendust head wafer.

9. The cleaning polish etch composition as recited in claim 8, wherein the cleaning polish etch composition has a pH of approximately 6 to 10.

10. The cleaning polish etch composition as recited in claim 9, wherein the cleaning polish etch composition has a pH of approximately 9.5 to 10.

11. The cleaning polish etch composition as recited in claim 1, wherein the etchant is an acid or base solution.

12. The cleaning polish etch composition as recited in claim 3, wherein the etchant is a metal etchant selected from a group of consisting of Ce, Zr, Ti, Fe, Sn, Al, Cr, Ni, Mn and Zn, and combinations thereof.

13. The cleaning polish etch composition as recited in claim 12, wherein the metal etchant is Ce.

14. The cleaning polish etch composition as recited in claim 8, wherein the etchant is a metal etchant selected from a group consisting of Ce, Zr, Ti, Fe, Sn, Al, Cr, Ni, Mn and Zn, and combinations thereof.

15. The cleaning polish etch composition as recited in claim 14, wherein the metal etchant is Fe.

16. A process for superfinishing a surface of a substrate, the process comprising the steps of:

(a) superfinishing the surface of the substrate by performing the substeps of

applying a colloidal slurry to the surface of the substrate;

mechanically rubbing the surface of the substrate with a pad while contacting the surface of the substrate with the colloidal slurry;

(b) removing slurry particles from the surface of the substrate after step (a) by performing the substeps of

applying a cleaning polish etch composition to the surface of the substrate, the cleaning polish etch composition comprising

a carrying fluid,

etchant for etching the substrate and/or attached slurry particles;

mechanically rubbing the surface of the substrate with a pad while contacting the surface of the substrate with the cleaning polish etch composition.

17. The process as recited in claim 16, wherein the substrate is selected from a group consisting of a glass disk substrate, a ceramic disk substrate, and a glass-ceramic disk substrate for use in a data storage device.

18. The process as recited in claim 17, wherein the substrate is a silicate-based glass disk substrate.

19. The process as recited in claim 18, wherein the cleaning polish etch composition has a pH of approximately 0 to 4.

20. The process as recited in claim 19, wherein the cleaning polish etch composition has a pH of approximately 0.8 to 3.0.

21. The process as recited in claim 20, wherein the cleaning polish etch composition has a pH of approximately 1.0 to 2.0.

22. The process as recited in claim 16, wherein the substrate is a head wafer selected from a group consisting of Sendust and Permalloy.

23. The process as recited in claim 22, wherein the substrate is a Sendust head wafer.

24. The process as recited in claim 23, wherein the cleaning polish etch composition has a pH of approximately 6 to 10.

25. The process as recited in claim 24, wherein the cleaning polish etch composition has a pH of approximately 9.5 to 10.

26. The process as recited in claim 16, wherein the etchant is an acid or base solution.

27. The process as recited in claim 18, wherein the etchant is a metal etchant selected from a group consisting of Ce, Zr, Ti, Fe, Sn, Al, Cr, Ni, Mn and Zn, and combinations thereof.

28. The process as recited in claim 27, wherein the metal etchant is Ce.

29. The process as recited in claim 23, wherein the etchant is a metal etchant selected from a group consisting of Ce, Zr, Ti, Fe, Sn, Al, Cr, Ni, Mn and Zn, and combinations thereof.

30. The process as recited in claim 29, wherein the metal etchant is Fe.

31. The process as recited in claim 16, further comprising the steps of rinsing and cleaning the surface of the substrate, wherein the rinsing step is performed using a deionized water rinse after the step (b), and wherein the cleaning step is performed using standard soap solutions after the rinsing step and removes substantially all of the slurry particles remaining on the surface of the substrate after the rinsing step.

32. A cleaning polish etch process for treating a superfinished surface of a substrate, the cleaning polish etch process comprising the steps of:

applying a cleaning polish etch composition to the surface of the substrate, the cleaning polish etch composition consisting essentially of

a carrying fluid,

etchant for etching the substrate and/or attached slurry particles;

mechanically rubbing the surface of the substrate with a pad while contacting the surface of the substrate with the cleaning polish etch composition.